REMARKS

The Office Action dated July 30, 2003 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto. Applicants have amended Figures 2a-2c to include the legend "Prior Art" as suggested by the Office Action. Applicants have amended claims 1, 4, 6 and 10 to more particularly point out and distinctly claim the present invention. Claims 1-14 are pending in the application. No new matter has been added, and no new issues are raised which require further consideration and/or search. In view of the following remarks and claim amendments, reconsideration and allowance of these claims is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §102

Claims 1-14 were rejected under 35 U.S.C. §102(b) as being anticipated by Kapadia (U.S. Patent No. 5,768,314). The Office Action alleges that Kapadia teaches all of the limitations of the claimed invention. Applicant respectfully submits that the prior art cited in the Office Action fails to teach, suggest or disclose the features of the claimed invention.

Claim 1, upon which claims 2-3 are dependent, recites a method for boosting data transmission in a telecommunications system comprises a fixed station, a terminal equipment, and a transcoder unit. A first transmission path connects the terminal

equipment with the fixed station and a second transmission path connects the fixed station and the transcoder unit. The first transmission path uses a first speech coding method. A second speech coding method is used on at least on a part of the second transmission path a second speech coding method is used. The second speech coding method is speech coding at a lower transmission rate than the first speech coding method. The speech parameters received from the terminal equipment for transmission onto the second transmission path are converted into speech parameters of the second speech coding method, and speech parameters to be transmitted to the terminal equipment on the first transmission path are converted into speech parameters of the first speech coding method.

Claim 4, upon which claim 5 is dependent, recites a method for boosting data transmission in a mobile communications system comprises a base transceiver station, a mobile station and a transcoder unit. A transmission path connects the mobile station over a radio path with the base transceiver station. The mobile communications system on the radio path uses a first speech coding method. A second speech coding method is used on at least on a part of the transmission path. The second speech is speech coding at a lower transmission rate than the first speech coding method. Speech parameters received from the mobile station for transmission onto the transmission path are converted into speech parameters of the second speech coding method, and speech parameters to be transmitted to the mobile station on the radio path are converted into speech parameters of the first speech coding method.

Claim 6, upon which claims 7-9 are dependent, recites an arrangement for boosting data transmission in a telecommunications system comprises a fixed station, a terminal equipment, and a transcoder unit. A first transmission path connects the terminal equipment with the fixed station, and a second transmission path connects the fixed station and the transcoder unit. The first transmission path uses a first speech coding method. At least one first speech coder converts speech parameters to be transmitted between the first and the second speech coding method. The second speech coding method is used on the transmission path on the transmission connection between the speech coder and the transcoder unit. The second speech coding method is speech coding at a lower transmission rate than the first speech coding method.

Claim 10, upon which claims 11-13 are dependent, recites a mobile communications system comprises base transceiver station, a mobile station and a transcoder unit. A transmission path connects the mobile station over a radio path with the base transceiver station. The mobile communications system on the radio path uses a first speech coding method. At least one first speech coder converts speech parameters to be transmitted between a first and a second speech coding method. The second speech coding method is used on the transmission path on the transmission connection between the speech coder and the transcoder unit, and the second speech coding method is speech coding of a lower transmission rate than the first speech coding method.

Claim 14 recites a telecommunication system having terminal equipment connected to a network side of said telecommunications network over a first transmission

path using speech parameters of a first speech coding method. The network side comprises a fixed station and a speech coder. The fixed station is connected to a transcoding unit over a second transmission path using speech parameters of a second speech coding method. The speech coder receives the speech parameters from the terminal equipment transmitted at a first speech coding rate and converts them into speech parameters of the second speech coding type, and in the opposite direction the speech coder can convert speech parameters to be transmitted to the terminal equipment into speech parameters of the first speech coding method.

As a result of the claimed invention, a system and method for boosting of data transmission is provided. One advantage of the present invention is that less transmission capacity is needed per speech connection, at least, in a part of a transmission connection between a base transceiver station and a transcoder unit of the network. Another advantage of the data communications system according to the invention is that the system allows the transmission of data between terminal equipment using different speech coding methods. These advantages are not all inclusive but merely exemplars of some of the benefits of the invention.

Kapadia discloses an apparatus and method for providing a combination full/half rate service type comprising a half rate speech code and a full rate channel codec having a front end arranged for communication with the half rate speech codec wherein the front end includes a "bit mapping re-ordering module." Speech is delivered to an input 10 of an audio interface 12 of a mobile station 11. The audio interface transmits the speech to a

first half speech codec for providing coded signals. The coded signals are delivered to a parameter sensitivity bit re-ordering module 33 of the coded signals. The re-ordered bits are delivered to a full rate channel codec 20 for further processing. The output of the full rate channel codec is transmitted over the air via RF interfaces 22 to a second hybrid channel processor 31 located at a base transceiver station 13.

Applicant submits that Kapadia fails to disclose or suggest the elements of the invention as set forth in the claimed invention, and thereby fails to provide the critical and nonobvious advantages that are provided by the invention. In order to anticipate a claim, it is well established that a reference must disclose every element of the claim. *Verdegaal Bros. V. Union Oil Co.,* 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.,* 9 USPQ2d (Fed. Cir. 1989)

Applicants respectfully submit that Kapadia does not anticipate the claimed invention because Kapadia fails to disclose or suggest several limitations of the claimed invention. Broadly speaking, the present invention is concerned with defining first and second transmission paths wherein speech coding is performed to convert the transmission rate on the second transmission path to a rate lower than on the first path. As discussed on page 6 lines 1-30 and Figure 3 of the application, in the present invention the mobile station MS may use full rate speech coding. The speech parameters of the full rate speech coding are transmitted between the base transceiver station BTS and the mobile station MS. The speech parameters are converted for a transmission

connection between the base transceiver station BTS and the network transcoder unit TRAU into speech parameters into speech parameters of the speech coding of a lower transmission rate, in the embodiment shown in Figure 3, into speech parameters of half rate speech coding. Thus, the speech parameters received from the mobile station are decoded at the end of the base transceiver station BTS and a new speech coding is carried out by a speech coding method of a lower transmission rate. The new speech parameters thus obtained are transmitted over the transmission connection to the transcoder unit TRAU.

Applicants respectfully submit that Kapadia fails to anticipate the claims of the invention because Kapadia fails to disclose each and every element of the claims. Initially, Applicants would like to emphasize that the process that is implemented in Kapadia differs from the present invention. To begin with, Applicants emphasize that "speech coding" and "channel coding" are two different matters. As is well known in the art, "speech coding" is used to transform the analog voice signal into a digital information stream representing the speech signal. The speech signal is compressed in the transmitter by a speech encoder so that fewer bits are used to represent the speech signal and the required transmission capacity is reduced. The speech signal is synthesized in the receiver by a speech decoder from the bits produced in the transmitter by the speech encoder. "Channel coding" is used to protect the compressed speech signal during the transmission. The channel coding introduces redundancy into the data flow by adding information in order to allow the detection or the correction of signal errors introduced

during the transmission. The transcoder unit, in the present invention, performing the speech coding is a separate unit, irrespective of its location (e.g. remote from the base station or located at the base station).

The present invention provides a method for boosting data transmission in a telecommunications system. The telecommunications system comprises a fixed station, a terminal equipment and a transcoder unit. A first transmission path connects the terminal equipment with the fixed station. A second transmission path connects the fixed station and the transcoder unit. On the first transmission path, a first speech coding method is used. On at least a part of the second transmission path, a second speech coding method is used. The second speech coding method is speech coding at a lower transmission rate than the first speech coding. The speech parameters received from the terminal equipment for transmission onto the second transmission path are converted into speech parameters of the second speech coding method and the speech parameters to be transmitted to the terminal equipment on the first transmission path are converted into speech parameters of the first speech coding method.

However, in Kapadia (US 5,768,314), there is provided a telecommunications system including a mobile station and a base transceiver station (BTS). The method of Kapadia seeks to provide a combination of a half rate speech codec and a full rate channel codec (see for example col. 2, lines 60-63 and Figure 3). In Kapadia, see Figure 3, the "first transmission path" which is represented by transmitted signals 34 is the radio path between the mobile station 11 and the base transceiver station 13. The "second

transmission path" of Kapadia is the serial link 39 "between" the base transceiver station 13 and the half rate speech codec 37.

In Kapadia, see for example Figure 3, the "speech is coded in the mobile station" and the "subsequent speech coding takes place in the half rate speech codec 37", which is situated after the second transmission path when the signal is coming from the direction of the first transmission path. Therefore, in Kapadia, when the signals are transmitted to the second transmission path along "serial link 39", the speech coding in the second transmission path does not differ from the speech coding in the first transmission path. In comparison to the embodiments of the present invention, the transmission path from the base transceiver station BTS1 22 which includes the DEC/ENC 45 and the BSC1 20 to the TRAU1 26 has a transmission rate which is lower than the transmission rate along the path that connects the mobile station MS1 and the base transceiver station BTS1 as shown for example in Figures, 4a, 4b, 5a, and 5b. In contrast, the corresponding segment of the transmission path in Kapadia, which is the transmission path shown by the serial link 39 from the base transceiver station 13 to the half rate speech codec does not include a lower transmission rate. In Kapadia, when the data is transmitted from the base transceiver station 13 via the serial link 39 to the half rate codec 37, the transmission rate remains the same as the transmission rate from the mobile station 11 to the base station 13.

Applicants also respectfully disagree with the Office Action's interpretation of Kapadia, column 1, lines 60-63 which states "The algorithms used in the full rate speech

codec and the ones currently proposed for the half rate speech codec are completely different. Hence, the parameters they produce and the parametric to sensitivity ordering are also different." The Office Action alleges that this statement teaches that Kapadia anticipates the use of different coding methods along different paths. Applicant respectfully submit that this passage from Kapadia teaches that the parameters and parametric to sensitivity ordering produced by the half rate speech codec are different than the parameters and parametric to sensitivity ordering produced by the full rate speech codec. In this passage, Kapadia is discussing the aspects of the codec and not the process of converting one speech coding method to another speech coding method. As is known in the art, a codec is an "algorithm" or specialized computer program that reduces or compresses the number of bytes consumed by large files and programs. The compression technique of codec works by eliminating redundancies in the data. Kapadia is concerned with the "sensitivity order" of the bits. In column 1, lines 41-49, Kapadia explains that the speech codec delivers a frame of compressed speech bits, grouped in terms of the speech parameters that represent the original speech. These parametrically ordered bits are re-ordered by the channel codec into a "sensitivity order." A single bit error in any of the most sensitive bits will result in the inability to intelligibly regenerate the original speech. Whereas bit errors in the least sensitive bits result in only slight, if at all subjective degradation of the decoded speech.

Kapadia teaches three alternatives for the transmission: 1) normal half rate speech coding with half rate channel coding, 2) normal full rate speech coding with full rate

channel coding, and 3) half rate speech coding with full rate channel coding. In the third alternative, which is what Kapadia claims to be inventive, a bit re-ordering module 33 in a hybrid channel processor 32 is needed. See Figures 4-6 and, for example, column 4, lines 10-18 and claim 1 of Kapadia.

In the full/half rate service of Kapadia, the bit-mapping re-ordering of half rate speech parameters makes then possible the full rate channel coding. The bit-mapping re-ordering is not needed in normal full rate mode of operation or normal half rate mode of operation. See, for example, column 3 line 65 to column 4 line 24 and Figures 4-6 of Kapadia. Therefore, Applicants respectfully agree with the Office Action's interpretation of Figures 4-6 of Kapadia. Kapadia does not teach converting from one speech coding method to another speech coding method.

The method of Kapadia provides thus more robust transmission of half rate speech frames over the radio path. This results in less critical errors and better speech quality. The present invention allows using several suitable speech coding methods in series for optimizing the transmission capacity in the network. The method of the present invention is transparent to the mobile station as it does not need any special arrangement, contrary to Kapadia where the bit re-ordering module is needed in the mobile station.

Thus, Kapadia does not teach or suggest a method for boosting data transmission in a telecommunications system as recited in claims 1, 6, 10 and 14.

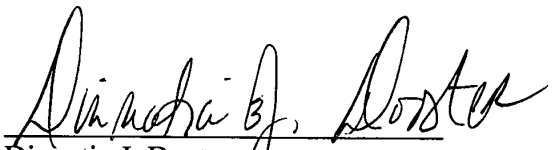
In addition, claims 2-3 depend from claim 1, claims 5 depends from claim 4, claims 7-9 depend from claim 6, and claims 11-13 depend from claim 10 and are therefore allowable at least for the reasons claims 1, 4, 6 and 10 are allowable, respectively, and for the specific limitations recited therein.

Applicant submits that Kapadia fails to disclose or suggest several limitations of the claimed invention as discussed above. Thus, Applicants submit that certain clear and important distinctions exist between the cited prior art and the claimed invention. Applicant submits that these distinctions are more than sufficient to render the claims of the invention unanticipated by and unobvious in view of the prior art.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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Enclosures: Replacement Sheets for Figures 1-3